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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,311	12/12/2005	Meena Augustus	689290-248	4638

27162 7590 02/06/2008

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EXAMINER	
BAUGHMAN, MOLLY E	
ART UNIT	**PAPER NUMBER**
1637	

MAIL DATE	DELIVERY MODE
02/06/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/540,311	AUGUSTUS ET AL.	
	Examiner	Art Unit	
	Molly E. Baughman	1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-59* is/are pending in the application.

4a) Of the above claim(s) *1-15,19-27 and 31-59* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16-18 and 28-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's election without traverse of Group III, claims 16-18 and 28-30, and the further subgroup of SEQ ID NO:1 and SEQ ID NO:7 in the reply filed on 11/16/07 is acknowledged.

2. Claims 1-15, 19-27, and 31-59 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11/16/07.

3. Claims 16-18 and 28-30 are currently under examination for the sequences of SEQ ID NO:1 and/or 7.

Priority

4. If applicant desires to claim the benefit of a prior-filed application under 35 U.S.C. 371, a specific reference to the prior-filed application in compliance with 37 CFR 1.78(a) must be included in the first sentence(s) of the specification following the title or in an application data sheet. For benefit claims under 35 U.S.C. 120, 121 or 365(c), the reference must include the relationship (i.e., continuation, divisional, or continuation-in-part) of the applications.

If the instant application is a utility or plant application filed under 35 U.S.C. 111(a) on or after November 29, 2000, the specific reference must be submitted during the pendency of the application and within the later of four months from the actual filing date of the application or sixteen months from the filing date of the prior application. If

the application is a utility or plant application which entered the national stage from an international application filed on or after November 29, 2000, after compliance with 35 U.S.C. 371, the specific reference must be submitted during the pendency of the application and within the later of four months from the date on which the national stage commenced under 35 U.S.C. 371(b) or (f) or sixteen months from the filing date of the prior application. See 37 CFR 1.78(a)(2)(ii) and (a)(5)(ii). This time period is not extendable and a failure to submit the reference required by 35 U.S.C. 119(e) and/or 120, where applicable, within this time period is considered a waiver of any benefit of such prior application(s) under 35 U.S.C. 119(e), 120, 121 and 365(c). A benefit claim filed after the required time period may be accepted if it is accompanied by a grantable petition to accept an unintentionally delayed benefit claim under 35 U.S.C. 119(e), 120, 121 and 365(c). The petition must be accompanied by (1) the reference required by 35 U.S.C. 120 or 119(e) and 37 CFR 1.78(a)(2) or (a)(5) to the prior application (unless previously submitted), (2) a surcharge under 37 CFR 1.17(t), and (3) a statement that the entire delay between the date the claim was due under 37 CFR 1.78(a)(2) or (a)(5) and the date the claim was filed was unintentional. The Director may require additional information where there is a question whether the delay was unintentional. The petition should be addressed to: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

If the reference to the prior application was previously submitted within the time period set forth in 37 CFR 1.78(a), but not in the first sentence(s) of the specification or an application data sheet (ADS) as required by 37 CFR 1.78(a) (e.g., if the reference

was submitted in an oath or declaration or the application transmittal letter), and the information concerning the benefit claim was recognized by the Office as shown by its inclusion on the first filing receipt, the petition under 37 CFR 1.78(a) and the surcharge under 37 CFR 1.17(t) are not required. Applicant is still required to submit the reference in compliance with 37 CFR 1.78(a) by filing an amendment to the first sentence(s) of the specification or an ADS. See MPEP § 201.11.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 16-18 and 28-30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 16 and 28 recite a gene *corresponding to* a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1, or that encodes a polypeptide having the amino acid sequence of SEQ ID NO:7, wherein the specification describes a genus of such genes to include genes encoding RNA that is at least 90% identical to such SEQ IDs, or genes including sequences at least 90% identical to a sequence of SEQ ID NO:1 or 7 (pg.22). However, the specification does not provide any description of any variants of such sequences or any

possible homologous genes which would still be correlated to cancer within the scope of the invention.

7. Claims 16-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Particularly, the specification does not provide a clear indication of whether an increase in expression of SEQ ID NO:1, or even a gene corresponding to a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1 is indicative of a particular cancerous status of a cell.

Factors to be considered in determining whether a disclosure meets the enablement requirement of 35 USC 112, first paragraph, have been described by the court in *In re Wands*, 8 USPQ2d 1400 (CA FC 1988). *Wands* states at page 1404,

> "Factors to be considered in determining whether a disclosure would require undue experimentation have been summarized by the board in Ex parte Forman. They include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims."

The nature of the invention

The claims are drawn to methods of detecting the cancerous status of a cell, wherein detection of the elevated expression of at least one gene corresponding to a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1 is indicative of the cancerous status of the cell.

The breadth of the claims

The claims are broadly drawn to any increase in expression of a gene corresponding to a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1, which can be used to make a determination on the *cancerous status* of the cell. This encompasses a broad range of cell phenotypes and "statuses" for many different types of cell types which may be cancerous. It also encompasses any elevation of any gene which has at least 90% homology with a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1, which encompasses a broad range of sequences. It also broadly encompasses any increase in expression, which is not relative to a particular background.

Quantity of Experimentation

The quantity of experimentation in this area is immense since it would require a plethora of different types of cells which are suspected to be cancerous, a determination to be made somehow on the cancerous status of each cell (in which the specification

provides no guidance what is encompassed or defined by a cancerous status), the measurement of plethora of genes which share at least 90% homology to a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1, a determination of what constitutes "an elevated expression" in each case, and determining the relation of each elevated gene with the predetermined cancerous status of each different cell type, which levels are indicative of each cancerous status for each cell type, and whether any have a statistical relevance. This would require an extreme amount of experimentation.

The unpredictability of the art and the state of the prior art

The art provides no guidance on the association of SEQ ID NO:1, or nucleic acids sharing 90% homology to SEQ ID NO:1, to cancer.

Working Examples

The specification provides a general example of testing SEQ ID NO:1-6 for an increase in expression in response to a treatment of a chemical agent or without (Example 1), which provides no insight what type of cancer cells are being tested (i.e. tissue type, nor tumor stage or grade), or whether those cells have an increase in expression of SEQ ID NO:1 with or without treatment with a chemical agent. Example 2 provides a general detection of TRIP13 gene amplification, using BAC probes derived from the sequences disclosed, however, there is no indication within the method steps or results which would provide a correlation of each cancer specifically with SEQ ID

NO:1. All of the results provide results for amplified TRIP13, however, it is unclear what this number represents, or if it is even related to expression of SEQ ID NO:1.

Furthermore, it is not clear that any of the results are indicative that TRIP13 expression or amplification is definitely associated with cancer. For example, in Table 1, the TRIP13 amplification frequencies indicated for each tissue type of cancer are all below 25%, and in Table 2, there are far more cases with a normal copy number than with an amplified TRIP13, wherein the percentage of amplified TRIP13 in the total population are mostly under 10% for all types of tumors. It is unclear how one can reasonably make a definite correlation of TRIP13 amplified expression to cancer since most cancer samples appear to have normal expression of TRIP13.

Guidance in the Specification.

The specification provides guidance only that TRIP13 is over-expressed in about 40% of epithelial tumors (pg.12), and examples provide guidance only to an amplified expression of TRIP13 in various cancer tissue types, tumor stages, tumor grades, nodal metastases. There is no guidance to whether SEQ ID NO:1 is specifically correlated to any type of cancer, or specifically indicative of a particular cancerous status of the cell.

Level of Skill in the Art

The level of skill in the art is deemed to be high.

Conclusion

In the instant case, as discussed above, the level of unpredictability in the art is high since there is no teaching of SEQ ID NO:1 in relation to cancer, and the specification and working examples provide no clear indication that an increase in expression of SEQ ID NO:1 is specifically correlated to any type of cancer. As such, it is unclear of one of skill in the art can reasonably make a conclusion of whether an increase in expression of SEQ ID NO:1 would be indicative of whether any cell is cancerous, let alone be indicative of a particular "cancerous status."

8. Claims 28-30 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for *detecting a disposition toward developing cancer*, does not reasonably provide enablement for *detecting cancer*. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims. Particularly, the specification does not provide a clear indication of whether detecting an increase in expression of SEQ ID NO:1, a gene corresponding to a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1, a polynucleotide encoding a polypeptide having the amino acid sequence of SEQ ID NO:7, or a gene corresponding to a polynucleotide encoding a polypeptide having the amino acid sequence of SEQ ID NO:7 provides a definite detection of cancer.

Factors to be considered in determining whether a disclosure meets the enablement requirement of 35 USC 112, first paragraph, have been described by the court in *In re Wands*, 8 USPQ2d 1400 (CA FC 1988). *Wands* states at page 1404,

"Factors to be considered in determining whether a disclosure would require undue experimentation have been summarized by the board in Ex parte Forman. They include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims."

The nature of the invention

The claims are drawn to methods of detecting cancer or a disposition toward developing cancer, comprising the detection of an increase in expression of a gene corresponding to a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1, or that encodes a polypeptide having the amino acid sequence of SEQ ID NO:7.

The breadth of the claims

The claims are broadly drawn to any increase in expression of a gene corresponding to a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1, or encoding a polypeptide having the amino acid sequence of SEQ ID NO:7 which can be used to detect cancer or a disposition toward developing cancer. This encompasses any elevation of any gene which has at least 90% homology with a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1, or has at least 90% homology

with a polynucleotide that encodes a polypeptide having the amino acid sequence of SEQ ID NO:7, which encompasses a broad range of sequences. It also encompasses the detection of any cancer; which includes a huge genus of cancers which are not known to develop, function, or have the same markers. It also includes any increase in expression, which is not relative to a particular background.

Quantity of Experimentation

The quantity of experimentation in this area is immense since it would require a plethora of different types of cells which are suspected to be cancerous, the measurement of plethora of genes which share at least 90% homology to a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1, or at least 90% homology to a polynucleotide that encodes a polypeptide having the amino acid sequence of SEQ ID NO:7, determination of what constitutes "an elevated expression" in each case, and determining which levels are indicative of cancer. This would require an extreme amount of experimentation.

The unpredictability of the art and the state of the prior art

The art teaches provides no guidance on the association of SEQ ID NO:1, or nucleic acids sharing 90% homology to SEQ ID NO:1, to cancer.

Working Examples

The specification provides a general example of testing SEQ ID NO:1-6 for an increase in expression in response to a treatment of a chemical agent or without (Example 1), which provides no insight what type of cancer cells are being tested (i.e. tissue type, nor tumor stage or grade), or whether those cells have an increase in expression of SEQ ID NO:1 with or without treatment with a chemical agent. This example does not even mention sequences of SEQ ID NO:7, or those that encode SEQ ID NO:7. Example 2 provides a general detection of TRIP13 gene amplification, using BAC probes derived from the sequences disclosed, however, there is no indication within the method steps or results which would provide a correlation of each cancer specifically with SEQ ID NO:1 or 7. All of the results provide results for amplified TRIP13, however, it is unclear what this number represents, or if it is even related to expression of SEQ ID NO:1 or 7.

Furthermore, it is not clear that any of the results are indicative that TRIP13 expression or amplification is definitely associated with cancer. For example, in Table 1, the TRIP13 amplification frequencies indicated for each tissue type of cancer are all below 25%, and in Table 2, there are far more cases of cancer samples with a normal copy number than with an amplified TRIP13, wherein the percentage of amplified TRIP13 in the total population are mostly under 10% for all types of tumors. It is unclear how one can reasonably make a definite correlation of TRIP13 amplified expression to cancer since most cancer samples appear to have normal expression of TRIP13.

Guidance in the Specification.

The specification provides guidance only that TRIP13 is over-expressed in about 40% of epithelial tumors (pg.12), and examples provide guidance only to an amplified expression of TRIP13 in various cancer tissue types, tumor stages, tumor grades, nodal metastases. There is no guidance to whether SEQ ID NO:1 or 7 is specifically correlated to any type of cancer, or if such sequences can provide a clear indication if a sample is cancerous.

Level of Skill in the Art

The level of skill in the art is deemed to be high.

Conclusion

In the instant case, as discussed above, the level of unpredictability in the art is high since there is no teaching of SEQ ID NO:1 in relation to cancer, and the specification and working examples provide no clear indication that an increase in expression of SEQ ID NO:1 or SEQ ID NO:7 is specifically correlated to any type of cancer. As such, it is unclear of one of skill in the art can reasonably make a conclusion of whether an increase in expression of SEQ ID NO:1 or 7 would be indicative of whether any cell is cancerous.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 16-18 and 28-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claims 16-18 and 28-30 are confusing because it cannot be determined what is encompassed by "elevated expression," in claim 16 or "an increase in expression," in claim 28. It is unclear what such elevated expression is in reference to and how such a determination can be made. For example, the specification provides guidance to determining the elevated expression by comparison to normal cells or non-cancerous cells (i.e. over a particular background) on pg.23 and pg.31.

b. Claim 16 is confusing because it cannot be determined what is encompassed by "cancerous status of a cell." While the specification provides various descriptions of the status of a cell (i.e. pg.17), however, there is no definition of a cancerous status of a cell.

c. Claim 28 is confusing because the preamble states, "a method for detecting cancer or a disposition toward developing cancer," however, the final step does not provide connection to the preamble. For example, the method only provides a step of detecting, and does not indicate how this correlates to detecting cancer or a disposition toward developing cancer.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 28-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Dai et al. (US 2003/0224374, filed 6/14/02).

Dai et al. also teach a method of detecting cancer in a sample from a patient an increase in expression of a gene corresponding to a polynucleotide that encodes a polypeptide having the amino acid sequence of SEQ ID NO:7, specifically, Dai et al. teach detecting SEQ ID NO:1896, which encodes a polypeptide having the amino acid sequence of SEQ ID NO:7:

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US-10-540-311-7 (1-432) x US-10-172-118-1896 (1-2203)

Qy          1 MetAspGluAlaValGlyAspLeuLysGlnAlaLeuProCysValAlaGluSerProThr 20
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         46 ATGGACGAGGCCGTGGGCGACCTGAAGCAGGCGCTTCCCTGTGTGGCCGAGTCGCCAACG
105

Qy         21 ValHisValGluValHisGlnArgGlySerSerThrAlaLysLysGluAspIleAsnLeu 40
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        106 GTCCACGTGGAGGTGCATCAGCGCGGCAGCAGCACTGCAAAGAAAGAAGACATAAACCTG
165

Qy         41 SerValArgLysLeuLeuAsnArgHisAsnIleValPheGlyAspTyrThrTrpThrGlu 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
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Db        166 AGTGTTAGAAAGCTACTCAACAGACATAATATTGTGTTTGGTGATTACACATGGACTGAG
225

Qy         61 PheAspGluProPheLeuThrArgAsnValGlnSerValSerIleIleAspThrGluLeu 80
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        226 TTTGATGAACCTTTTTTGACCAGAAATGTGCAGTCTGTGTCTATTATTGACACAGAATTA
285

Qy         81 LysValLysAspSerGlnProIleAspLeuSerAlaCysThrValAlaLeuHisIlePhe
100
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        286 AAGGTTAAAGACTCACAGCCCATCGATTTGAGTGCATGCACTGTTGCACTTCACATTTTC
345

Qy        101 GlnLeuAsnGluAspGlyProSerSerGluAsnLeuGluGluGluThrGluAsnIleIle
120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        346 CAGCTGAATGAAGATGGCCCCAGCAGTGAAAATCTGGAGGAAGAGACAGAAAACATAATT
405

Qy        121 AlaAlaAsnHisTrpValLeuProAlaAlaGluPheHisGlyLeuTrpAspSerLeuVal
140
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        406 GCAGCAAATCACTGGGTTCTACCTGCAGCTGAATTCCATGGGCTTTGGGACAGCTTGGTA
465

Qy        141 TyrAspValGluValLysSerHisLeuLeuAspTyrValMetThrThrLeuLeuPheSer
160
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        466 TACGATGTGGAAGTCAAATCCCATCTCCTCGATTATGTGATGACAACTTTACTGTTTTCA
525

Qy        161 AspLysAsnValAsnSerAsnLeuIleThrTrpAsnArgValValLeuLeuHisGlyPro
180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        526 GACAAGAACGTCAACAGCAACCTCATCACCTGGAACCGGGTGGTGCTGCTCCACGGTCCT
585

Qy        181 ProGlyThrGlyLysThrSerLeuCysLysAlaLeuAlaGlnLysLeuThrIleArgLeu
200
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        586 CCTGGCACTGGAAAAACATCCCTGTGTAAAGCGTTAGCCCAGAAATTGACAATTAGACTT
645

Qy        201 SerSerArgTyrArgTyrGlyGlnLeuIleGluIleAsnSerHisSerLeuPheSerLys
220
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        646 TCAAGCAGGTACCGATATGGCCAATTAATTGAAATAAACAGCCACAGCCTCTTTTCTAAG
705

Qy        221 TrpPheSerGluSerGlyLysLeuValThrLysMetPheGlnLysIleGlnAspLeuIle
240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
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Db        706 TGGTTTTCGGAAAGTGGCAAGCTGGTAACCAAGATGTTTCAGAAGATTCAGGATTTGATT
765

Qy        241 AspAspLysAspAlaLeuValPheValLeuIleAspGluValGluSerLeuThrAlaAla
260

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Db        766 GATGATAAAGACGCCCTGGTGTTCGTGCTGATTGATGAGGTGGAGAGTCTCACAGCCGCC
825

Qy        261 ArgAsnAlaCysArgAlaGlyThrGluProSerAspAlaIleArgValValAsnAlaVal
280

            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        826 CGAAATGCCTGCAGGGCGGGCACCGAGCCATCAGATGCCATCCGCGTGGTCAATGCTGTC
885

Qy        281 LeuThrGlnIleAspGlnIleLysArgHisSerAsnValValIleLeuThrThrSerAsn
300

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Db        886 TTGACCCAAATTGATCAGATTAAAAGGCATTCCAATGTTGTGATTCTGACCACTTCTAAC
945

Qy        301 IleThrGluLysIleAspValAlaPheValAspArgAlaAspIleLysGlnTyrIleGly
320

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Db        946 ATCACCGAGAAGATCGACGTGGCCTTCGTGGACAGGGCTGACATCAAGCAGTACATTGGG
1005

Qy        321 ProProSerAlaAlaAlaIlePheLysIleTyrLeuSerCysLeuGluGluLeuMetLys
340

            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1006 CCACCCTCTGCAGCAGCCATCTTCAAAATCTACCTCTCTTGTTTGGAAGAACTGATGAAG
1065

Qy        341 CysGlnIleIleTyrProArgGlnGlnLeuLeuThrLeuArgGluLeuGluMetIleGly
360

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Db       1066 TGTCAGATCATATACCCTCGCCAGCAGCTGCTGACCCTCCGAGAGCTAGAGATGATTGGC
1125

Qy        361 PheIleGluAsnAsnValSerLysLeuSerLeuLeuLeuAsnAspIleSerArgLysSer
380

            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1126 TTCATTGAAAACAACGTGTCAAAATTGAGCCTTCTTTTGAATGACATTTCAAGGAAGAGC
1185

Qy        381 GluGlyLeuSerGlyArgValLeuArgLysLeuProPheLeuAlaHisAlaLeuTyrVal
400

            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1186 GAGGGCCTCAGCGGCCGGGTCCTGAGAAAACTCCCCTTTCTGGCTCATGCGCTGTATGTC
1245

Qy        401 GlnAlaProThrValThrIleGluGlyPheLeuGlnAlaLeuSerLeuAlaValAspLys
420
```

```
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1246 CAGGCCCCCACCGTCACCATAGAGGGGTTCCTCCAGGCCCTGTCTCTGGCAGTGGACAAG
1305

Qy        421 GlnPheGluGluArgLysLysLeuAlaAlaTyrIle 432
                ||||||||||||||||||||||||||||||||||||
Db       1306 CAGTTTGAAGAGAGAAAGAAGCTTGCAGCTTACATC 1341
```

Also see abstract, Fig.2-4, paragraphs [0003], [0012], [0025], and Table 1 - pg.20).

4. Claims 28-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Mutter et al. (US 6,703,204, filed 7/27/01).

Mutter et al. also teach a method of detecting cancer in a sample from a patient an increase in expression of a gene corresponding to a polynucleotide that encodes a polypeptide having the amino acid sequence of SEQ ID NO:7, specifically, Mutter teaches SEQ ID NO:29 (i.e. ABK35559, and Genbank Acc.# U96131), a polynucleotide encoding the amino acid sequence of SEQ ID NO:7:

```
US-10-540-311-7 (1-432) x ABK35559 (1-2203)

Qy          1 MetAspGluAlaValGlyAspLeuLysGlnAlaLeuProCysValAlaGluSerProThr 20
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         46 ATGGACGAGGCCGTGGGCGACCTGAAGCAGGCGCTTCCCTGTGTGGCCGAGTCGCCAACG
105

Qy         21 ValHisValGluValHisGlnArgGlySerSerThrAlaLysLysGluAspIleAsnLeu 40
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        106 GTCCACGTGGAGGTGCATCAGCGCGGCAGCAGCACTGCAAAGAAAGAAGACATAAACCTG
165

Qy         41 SerValArgLysLeuLeuAsnArgHisAsnIleValPheGlyAspTyrThrTrpThrGlu 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        166 AGTGTTAGAAAGCTACTCAACAGACATAATATTGTGTTTGGTGATTACACATGGACTGAG
225

Qy         61 PheAspGluProPheLeuThrArgAsnValGlnSerValSerIleIleAspThrGluLeu 80
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        226 TTTGATGAACCTTTTTTGACCAGAAATGTGCAGTCTGTGTCTATTATTGACACAGAATTA
285
```

```
Qy          81 LysValLysAspSerGlnProIleAspLeuSerAlaCysThrValAlaLeuHisIlePhe
100

Db         286 AAGGTTAAAGACTCACAGCCCATCGATTTGAGTGCATGCACTGTTGCACTTCACATTTTC
345

Qy         101 GlnLeuAsnGluAspGlyProSerSerGluAsnLeuGluGluGluThrGluAsnIleIle
120

Db         346 CAGCTGAATGAAGATGGCCCCAGCAGTGAAAATCTGGAGGAAGAGACAGAAAACATAATT
405

Qy         121 AlaAlaAsnHisTrpValLeuProAlaAlaGluPheHisGlyLeuTrpAspSerLeuVal
140

Db         406 GCAGCAAATCACTGGGTTCTACCTGCAGCTGAATTCCATGGGCTTTGGGACAGCTTGGTA
465

Qy         141 TyrAspValGluValLysSerHisLeuLeuAspTyrValMetThrThrLeuLeuPheSer
160

Db         466 TACGATGTGGAAGTCAAATCCCATCTCCTCGATTATGTGATGACAACTTTACTGTTTTCA
525

Qy         161 AspLysAsnValAsnSerAsnLeuIleThrTrpAsnArgValValLeuLeuHisGlyPro
180

Db         526 GACAAGAACGTCAACAGCAACCTCATCACCTGGAACCGGGTGGTGCTGCTCCACGGTCCT
585

Qy         181 ProGlyThrGlyLysThrSerLeuCysLysAlaLeuAlaGlnLysLeuThrIleArgLeu
200

Db         586 CCTGGCACTGGAAAAACATCCCTGTGTAAAGCGTTAGCCCAGAAATTGACAATTAGACTT
645

Qy         201 SerSerArgTyrArgTyrGlyGlnLeuIleGluIleAsnSerHisSerLeuPheSerLys
220

Db         646 TCAAGCAGGTACCGATATGGCCAATTAATTGAAATAAACAGCCACAGCCTCTTTTCTAAG
705

Qy         221 TrpPheSerGluSerGlyLysLeuValThrLysMetPheGlnLysIleGlnAspLeuIle
240

Db         706 TGGTTTTCGGAAAGTGGCAAGCTGGTAACCAAGATGTTTCAGAAGATTCAGGATTTGATT
765

Qy         241 AspAspLysAspAlaLeuValPheValLeuIleAspGluValGluSerLeuThrAlaAla
260
```

```
Db        766 GATGATAAAGACGCCCTGGTGTTCGTGCTGATTGATGAGGTGGAGAGTCTCACAGCCGCC
825

Qy        261 ArgAsnAlaCysArgAlaGlyThrGluProSerAspAlaIleArgValValAsnAlaVal
280

            |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        826 CGAAATGCCTGCAGGGCGGGCACCGAGCCATCAGATGCCATCCGCGTGGTCAATGCTGTC
885

Qy        281 LeuThrGlnIleAspGlnIleLysArgHisSerAsnValValIleLeuThrThrSerAsn
300

            |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        886 TTGACCCAAATTGATCAGATTAAAAGGCATTCCAATGTTGTGATTCTGACCACTTCTAAC
945

Qy        301 IleThrGluLysIleAspValAlaPheValAspArgAlaAspIleLysGlnTyrIleGly
320

            |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        946 ATCACCGAGAAGATCGACGTGGCCTTCGTGGACAGGGCTGACATCAAGCAGTACATTGGG
1005

Qy        321 ProProSerAlaAlaAlaIlePheLysIleTyrLeuSerCysLeuGluGluLeuMetLys
340

            |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1006 CCACCCTCTGCAGCAGCCATCTTCAAAATCTACCTCTCTTGTTTGGAAGAACTGATGAAG
1065

Qy        341 CysGlnIleIleTyrProArgGlnGlnLeuLeuThrLeuArgGluLeuGluMetIleGly
360

            |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1066 TGTCAGATCATATACCCTCGCCAGCAGCTGCTGACCCTCCGAGAGCTAGAGATGATTGGC
1125

Qy        361 PheIleGluAsnAsnValSerLysLeuSerLeuLeuLeuAsnAspIleSerArgLysSer
380

            |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1126 TTCATTGAAAACAACGTGTCAAAATTGAGCCTTCTTTTGAATGACATTTCAAGGAAGAGC
1185

Qy        381 GluGlyLeuSerGlyArgValLeuArgLysLeuProPheLeuAlaHisAlaLeuTyrVal
400

            |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1186 GAGGGCCTCAGCGGCCGGGTCCTGAGAAAACTCCCCTTTCTGGCTCATGCGCTGTATGTC
1245

Qy        401 GlnAlaProThrValThrIleGluGlyPheLeuGlnAlaLeuSerLeuAlaValAspLys
420

            |||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1246 CAGGCCCCCACCGTCACCATAGAGGGGTTCCTCCAGGCCCTGTCTCTGGCAGTGGACAAG
1305

Qy        421 GlnPheGluGluArgLysLysLeuAlaAlaTyrIle 432
              |||||||||||||||||||||||||||||||||||
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```
Db        1306 CAGTTTGAAGAGAGAAAGAAGCTTGCAGCTTACATC 1341
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See also abstract, col.2, lines 58-67; col.3, lines 1-53).

5. Claims 28-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Aziz et al. (WO 02/086443).

Aziz et al. teach a method of detecting cancer in a sample from a patient an increase in expression of a gene corresponding to a polynucleotide that encodes a polypeptide having the amino acid sequence of SEQ ID NO:7, specifically Aziz teach SEQ ID NO: 289, which encodes a polypeptide having the amino acid sequence of SEQ ID NO:7:

```
US-10-540-311-7 (1-432) x ABX76274 (1-2203)

Qy          1 MetAspGluAlaValGlyAspLeuLysGlnAlaLeuProCysValAlaGluSerProThr 20
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         46 ATGGACGAGGCCGTGGGCGACCTGAAGCAGGCGCTTCCCTGTGTGGCCGAGTCGCCAACG
105

Qy         21 ValHisValGluValHisGlnArgGlySerSerThrAlaLysLysGluAspIleAsnLeu 40
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        106 GTCCACGTGGAGGTGCATCAGCGCGGCAGCAGCACTGCAAAGAAAGAAGACATAAACCTG
165

Qy         41 SerValArgLysLeuLeuAsnArgHisAsnIleValPheGlyAspTyrThrTrpThrGlu 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        166 AGTGTTAGAAAGCTACTCAACAGACATAATATTGTGTTTGGTGATTACACATGGACTGAG
225

Qy         61 PheAspGluProPheLeuThrArgAsnValGlnSerValSerIleIleAspThrGluLeu 80
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        226 TTTGATGAACCTTTTTTGACCAGAAATGTGCAGTCTGTGTCTATTATTGACACAGAATTA
285

Qy         81 LysValLysAspSerGlnProIleAspLeuSerAlaCysThrValAlaLeuHisIlePhe
100
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        286 AAGGTTAAAGACTCACAGCCCATCGATTTGAGTGCATGCACTGTTGCACTTCACATTTTC
345
```

```
Qy       101 GlnLeuAsnGluAspGlyProSerSerGluAsnLeuGluGluGluThrGluAsnIleIle
120

Db       346 CAGCTGAATGAAGATGGCCCCAGCAGTGAAAATCTGGAGGAAGAGACAGAAAACATAATT
405

Qy       121 AlaAlaAsnHisTrpValLeuProAlaAlaGluPheHisGlyLeuTrpAspSerLeuVal
140

Db       406 GCAGCAAATCACTGGGTTCTACCTGCAGCTGAATTCCATGGGCTTTGGGACAGCTTGGTA
465

Qy       141 TyrAspValGluValLysSerHisLeuLeuAspTyrValMetThrThrLeuLeuPheSer
160

Db       466 TACGATGTGGAAGTCAAATCCCATCTCCTCGATTATGTGATGACAACTTTACTGTTTTCA
525

Qy       161 AspLysAsnValAsnSerAsnLeuIleThrTrpAsnArgValValLeuLeuHisGlyPro
180

Db       526 GACAAGAACGTCAACAGCAACCTCATCACCTGGAACCGGGTGGTGCTGCTCCACGGTCCT
585

Qy       181 ProGlyThrGlyLysThrSerLeuCysLysAlaLeuAlaGlnLysLeuThrIleArgLeu
200

Db       586 CCTGGCACTGGAAAAACATCCCTGTGTAAAGCGTTAGCCCAGAAATTGACAATTAGACTT
645

Qy       201 SerSerArgTyrArgTyrGlyGlnLeuIleGluIleAsnSerHisSerLeuPheSerLys
220

Db       646 TCAAGCAGGTACCGATATGGCCAATTAATTGAAATAAACAGCCACAGCCTCTTTTCTAAG
705

Qy       221 TrpPheSerGluSerGlyLysLeuValThrLysMetPheGlnLysIleGlnAspLeuIle
240

Db       706 TGGTTTTCGGAAAGTGGCAAGCTGGTAACCAAGATGTTTCAGAAGATTCAGGATTTGATT
765

Qy       241 AspAspLysAspAlaLeuValPheValLeuIleAspGluValGluSerLeuThrAlaAla
260

Db       766 GATGATAAAGACGCCCTGGTGTTCGTGCTGATTGATGAGGTGGAGAGTCTCACAGCCGCC
825

Qy       261 ArgAsnAlaCysArgAlaGlyThrGluProSerAspAlaIleArgValValAsnAlaVal
280

Db       826 CGAAATGCCTGCAGGGCGGGCACCGAGCCATCAGATGCCATCCGCGTGGTCAATGCTGTC
885
```

```
Qy        281 LeuThrGlnIleAspGlnIleLysArgHisSerAsnValValIleLeuThrThrSerAsn
300

Db        886 TTGACCCAAATTGATCAGATTAAAAGGCATTCCAATGTTGTGATTCTGACCACTTCTAAC
945

Qy        301 IleThrGluLysIleAspValAlaPheValAspArgAlaAspIleLysGlnTyrIleGly
320

Db        946 ATCACCGAGAAGATCGACGTGGCCTTCGTGGACAGGGCTGACATCAAGCAGTACATTGGG
1005

Qy        321 ProProSerAlaAlaAlaIlePheLysIleTyrLeuSerCysLeuGluGluLeuMetLys
340

Db       1006 CCACCCTCTGCAGCAGCCATCTTCAAAATCTACCTCTCTTGTTTGGAAGAACTGATGAAG
1065

Qy        341 CysGlnIleIleTyrProArgGlnGlnLeuLeuThrLeuArgGluLeuGluMetIleGly
360

Db       1066 TGTCAGATCATATACCCTCGCCAGCAGCTGCTGACCCTCCGAGAGCTAGAGATGATTGGC
1125

Qy        361 PheIleGluAsnAsnValSerLysLeuSerLeuLeuLeuAsnAspIleSerArgLysSer
380

Db       1126 TTCATTGAAAACAACGTGTCAAAATTGAGCCTTCTTTTGAATGACATTTCAAGGAAGAGC
1185

Qy        381 GluGlyLeuSerGlyArgValLeuArgLysLeuProPheLeuAlaHisAlaLeuTyrVal
400

Db       1186 GAGGGCCTCAGCGGCCGGGTCCTGAGAAAACTCCCCTTTCTGGCTCATGCGCTGTATGTC
1245

Qy        401 GlnAlaProThrValThrIleGluGlyPheLeuGlnAlaLeuSerLeuAlaValAspLys
420

Db       1246 CAGGCCCCCACCGTCACCATAGAGGGGTTCCTCCAGGCCCTGTCTCTGGCAGTGGACAAG
1305

Qy        421 GlnPheGluGluArgLysLysLeuAlaAlaTyrIle 432

Db       1306 CAGTTTGAAGAGAGAAAGAAGCTTGCAGCTTACATC 1341
```

See also pg.4-5, 24-26; claims 1, 7 for methods of detecting.

Summary

6. Claims 16-18 and 30 are free of the prior art, but are rejected for other reasons. No prior art has been found teaching or suggesting a sequence comprising SEQ ID NO:1, or a gene corresponding to a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1 (where the specification describes genes "corresponding to" such sequences as those which share at least 90% homology to such sequences). The closest art is Mintz et al. (US 20070083334), which discloses SEQ ID NO: 292,681 and is a continuation of application 10/242,799, having a priority date of 9/13/02, however, application 10/242,799 does not disclose SEQ ID NO: 292,681, and therefore does not constitute as *prior art*. Other prior art, Mutter et al. (US 6703204), which discloses SEQ ID NO:29, and Dai et al. (US 2003/0224374), which discloses SEQ ID NO:1896, are both 83.6% homologous to SEQ ID NO:1, and therefore, do not teach a gene comprising the nucleotide sequence of SEQ ID NO:1, or a gene sharing 90% homology to a polynucleotide comprising SEQ ID NO:1.

7. Strausberg et al., "Generation and initial analysis of more than 15,000 full-length human and mouse cDNA sequences," Proc.Natl.Acad.Sci, 2002, Vol.99, No.26, pp.16899-16903 is noted as a reference of interest. Strausberg discloses sequences BC019294 and BC00404, Homo Sapiens thyroid hormone receptor interactor 13 mRNAs, which both encode a polypeptide having the sequence of SEQ ID NO:7, and is 90.4% homologous to SEQ ID NO:1.

8. Bodary-Winter et al. (US 2007/0048301) is noted as a reference of interest. Bodary-Winter discloses SEQ ID NO:1244, which encodes a polypeptide having the sequence of SEQ ID NO:7, however, the methods of Bodary-Winter are drawn to diagnosing an inflammatory immune response or treating cancer, and not detecting cancer.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Molly E. Baughman whose telephone number is 571-272-4434. The examiner can normally be reached on Monday-Friday 8-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 571-272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Molly E Baughman
Examiner
Art Unit 1637

MEB 2/1/08

KENNETH R. HORLICK, PH.D
PRIMARY EXAMINER

2/4/08